PENDING CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method of estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system, the method comprising:

receiving OFDM symbols;

detecting a received power ~~of a signal~~ in an ~~unassigned~~ idle sub-carrier frequency band, wherein the idle sub-carrier frequency band includes only noise and interference;

and averaging the received power with at least one previously stored received power measurement for the ~~unassigned~~ idle sub-carrier frequency band.

2. (Cancelled)

3. (Currently Amended) The method of claim 1, further comprising, prior to detecting the received power, demodulating an ~~unassigned~~ idle sub-carrier corresponding to the ~~unassigned~~ idle sub-carrier frequency band.

4. (Currently Amended) The method of claim 1, further comprising determining the ~~unassigned~~ idle sub-carrier frequency band based in part on a received message.

5. (Currently Amended) The method of claim 1, further comprising determining the ~~unassigned~~ idle sub-carrier frequency band based in part on an internally generated sequence.

6. (Original) The method of claim 1, wherein receiving OFDM symbols comprises wirelessly receiving, from a base station transmitter, RF OFDM symbols.

7. (Original) The method of claim 1, wherein receiving OFDM symbols comprises:

converting wirelessly received RF OFDM symbols to baseband OFDM symbols;

removing a guard interval from the baseband OFDM symbols;

and transforming, using a Fast Fourier Transform (FFT), time domain OFDM baseband signals to modulated sub-carriers.

8. (Currently Amended) The method of claim 1, wherein detecting the received power comprises determining one of a magnitude, an amplitude, or a squared magnitude ~~of the signal~~ in the ~~unassigned OFDM~~ idle sub-carrier frequency band.

9. (Currently Amended) The method of claim 1, wherein detecting the received power comprises determining a sum of a square of a quadrature ~~signal~~ component with a square of an in-phase ~~signal~~ component.

10. (Currently Amended) The method of claim 1, further comprising:

determining if the ~~unassigned~~ idle sub-carrier frequency band comprises a system wide ~~unassigned~~ idle sub-carrier frequency band;

storing the detected received power as a noise plus interference estimate if the idle sub-carrier frequency band does not comprise the system wide ~~unassigned~~ idle sub-carrier frequency band;

and storing the detected received power as a noise floor estimate if the idle sub-carrier frequency band comprises the system wide ~~unassigned~~ idle sub-carrier frequency band.

11. (Original) The method of claim 10, further comprising synchronizing a time reference with a transmitter transmitting the OFDM symbols.

12. (Currently Amended) The method of claim 1, further comprising:

averaging the received power with at least one previously stored received power measurement to produce a noise estimate corresponding to the ~~unassigned~~ idle sub-carrier frequency band;

and communicating the noise estimate to a transmitter.

13. (Original) The method of claim 12, wherein communicating the noise estimate to the transmitter comprises transmitting the noise estimate from a terminal transmitter to a base transceiver station.

14. (Currently Amended) A method of estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system, the method comprising:

receiving OFDM symbols in a wireless cellular communication system, the OFDM symbols corresponding to a symbol period;

determining an ~~unassigned~~ idle sub-carrier frequency band during the symbol period, wherein the idle sub-carrier frequency band includes only noise and interference;

determining a power, during the symbol period, ~~of a signal~~ in a frequency band corresponding to the ~~unassigned~~ idle sub-carrier frequency band;

storing a value of the power of the ~~signal~~ idle sub-carrier frequency band in a memory;

and averaging the power of the ~~signal~~ idle sub-carrier frequency band with previously stored values to generate a noise estimate.

15. (Currently Amended) An apparatus for estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system, the apparatus comprising:

a wireless receiver configured to wirelessly receive OFDM symbols corresponding to an OFDM symbol period;

a detector configured to detect a received power level ~~of signals~~ received by the wireless receiver during the OFDM symbol period;

a processor coupled to the detector and configured to determine an ~~unassigned~~ idle sub-carrier frequency band during the OFDM symbol period wherein the idle sub-carrier frequency band includes only noise and interference, to determine a noise estimate based in part on a received power level in ~~a frequency band corresponding to~~ the

~~unassigned~~ idle sub-carrier frequency band, and to determine an average noise estimate based in part on the noise estimate and a previously stored noise estimate.

16. (Original) The apparatus of Claim 15, further comprising a memory coupled to the processor, the processor storing the noise estimate in the memory.

17. (Currently Amended) The apparatus of claim 15, further comprising a memory coupled to the processor and storing a predetermined number of previously determined noise estimates corresponding to the ~~unassigned~~ idle sub-carrier frequency band, the processor determining an average noise estimate based in part on the noise estimate and the previously determined noise estimates.

18. (Original) The apparatus of claim 15, wherein the wireless receiver comprises:

an RF receiver portion configured to wirelessly receive RF OFDM symbols and convert the RF OFDM symbols to the OFDM symbols;

a Fast Fourier Transform (FFT) module configured to receive the OFDM symbols from the RF receiver portion and transform the OFDM symbols to modulated sub-carriers;

and a demodulator coupled to the FFT module and configured to demodulate the modulated sub-carriers.

19. (Original) The apparatus of claim 18, wherein the detector detects the received power levels of an output of the demodulator.

20. (Currently Amended) The apparatus of claim 15, wherein the detector detects the received power level by determining one of a magnitude, an amplitude, or a squared magnitude ~~of the signals~~ received by the wireless receiver during the OFDM symbol period.

21. (Currently Amended) An apparatus for estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system, the apparatus comprising:

means for wirelessly receiving OFDM symbols corresponding to an OFDM symbol period;

means for detecting a received power level ~~of signals~~ received by the means for wirelessly receiving OFDM symbols during the OFDM symbol period;

processing means, coupled to the means for detecting, for determining an ~~unassigned~~ idle sub-carrier frequency band during the OFDM symbol period wherein the idle sub-carrier frequency band includes only noise and interference, for determining a noise estimate based in part on a received power level in ~~a frequency band corresponding to~~ the ~~unassigned~~ idle sub-carrier frequency band, and for determining an average noise estimate based in part on the noise estimate and a previously stored noise estimate.

22. (Previously Presented) The apparatus of claim 21, further comprising a memory coupled to the processing means, the processing means storing the noise estimate in the memory.

23. (Currently Amended) The apparatus of claim 21, further comprising a memory coupled to the processing means and storing a predetermined number of previously determined noise estimates corresponding to the ~~unassigned~~ idle sub-carrier frequency band, the processing means determining an average noise estimate based in part on the noise estimate and the previously determined noise estimates.

24. (Previously Presented) The apparatus of claim 21, wherein the means for wirelessly receiving OFDM symbols comprises:

RF receiving means for wirelessly receiving RF OFDM symbols and for converting the RF OFDM symbols to the OFDM symbols;

Fast Fourier Transform (FFT) means for receiving the OFDM symbols from the RF receiving means and for transforming the OFDM symbols to modulated sub-carriers;

and demodulating means, coupled to the FFT means, for demodulating the modulated sub-carriers.

25. (Previously presented) The apparatus of claim 24, wherein the means for detecting detects the received power levels of an output of the demodulating means.

26. (Currently Amended) The apparatus of claim 21, wherein the means for detecting detects the received power level by determining one of a magnitude, an amplitude, or a squared magnitude ~~of the signals~~ received by the wireless receiver during the OFDM symbol period.

27. (Currently Amended) A computer-readable medium embodying a program of instructions executable by a processor to perform a method of estimating noise in an Orthogonal Frequency Division Multiplexing (OFDM) system, the method comprising:

receiving OFDM symbols in a wireless cellular communication system, the OFDM symbols corresponding to a symbol period;

determining an ~~unassigned~~ idle sub-carrier frequency band during the symbol period, wherein the idle sub-carrier frequency band includes only noise and interference;

determining a power, during the symbol period, ~~of a signal~~ in ~~a frequency band corresponding to~~ the ~~unassigned~~ idle sub-carrier frequency band;

storing a value of the power of the ~~signal~~ idle sub-carrier frequency band in a memory;

and averaging the power of the ~~signal~~ idle sub-carrier frequency band with previously stored values to generate a noise estimate.